WHAT IS CLAIMED IS:

1. An optical fiber illuminator comprising an optical fiber, and light-diffusing particles affixed to a terminal end of the optical fiber.

2. The illuminator of claim 1, wherein the light-diffusing particles are optically transparent solid particles of regular or irregular geometry.

3. The illuminator of claim 2, wherein the particles include at least one selected from solid spheres, ellipsoids, cubes, polygons, tetrahedrons and mixtures thereof.

4. The illuminator as in claim 1, further comprising a bonding material for affixing the light-diffusing particles to the terminal end of the optical fiber.

5. An optical illuminator comprising an optical fiber having a light-emitting terminal end, and an optically transparent light-diffusion medium affixed to said terminal end of said optical fiber, wherein said light diffusion medium is comprised of a bonding material, and solid light-diffusing particles dispersed in said bonding material.

6. The illuminator as in claim 4 or 5, wherein the particles are symmetrically or asymmetrically dispersed in the bonding material.

7. The illuminator as in claim 4 or 5, wherein the particles are present in an amount sufficient to achieve a light diffusion profile which is at least about 1.25 times the light diffusion profile of a comparable optical fiber having no light-diffusing particles affixed to a terminal end thereof.

8. The illuminator as in claim 4 or 5, wherein the light-diffusing particles are present in an amount of less than about 90 vol.%.

9. The illuminator as in claim 4 or 5, wherein the light-diffusing particles are present in an amount of less than about 60 vol.%.

10. The illuminator as in claim 4 or 5, wherein the light-diffusing particles are present in an amount of less than about 30 vol.%.

11. The illuminator as in claim 1 or 5, wherein the light-diffusing particles have an average particle diameter of between about 1 μm to about 375 μm.

12. The illuminator as in claim 1 or 5, wherein the light-diffusing particles have an average particle diameter of less than 10.0 μm.

13. The illuminator as in claim 1 or 5, wherein the light-diffusing particles have an average particle diameter of between about 1.0 μm to about 10.0 μm.

14. The illuminator as in claim 13, wherein the light-diffusing particles have an average particle diameter of between about 5.0 μm to about 10.0 μm.

15. The illuminator as in claim 1 or 5, wherein the light-diffusing particles have an average particle diameter which is less than about one-half the diameter of the optical fiber.

16. The illuminator as in claim 1 or 5, wherein the light-diffusing particles have an average particle diameter which is less than about one-fourth the diameter of the optical fiber.

17. The illuminator as in claim 4 or 5, wherein the bonding material is optically transparent and wherein the difference between the indices of refraction of the bonding material and optical fiber is less than about 15%

18. The illuminator as in claim 17, wherein the difference between the indices of refraction of the bodning material and optical fiber is less than about 5%.

19. The illuminator as in claim 4 or 5, wherein the bonding material has an index of refraction which is substantially the same as the index of refraction of the optical fiber such that Fresnel reflection at an interface between the bonding material and the optical fiber is less than about 5%.

20. The illuminator as in claim 19, wherein the Fresnel reflection is less than about 1%.

21. The illuminator as in claim 5, wherein the terminal end of the optical fiber and/or the bonding material is shaped.

22. The illuminator as in claim 5, wherein the terminal end of the optical fiber forms an angle with respect to the longitudinal axis of the optical fiber, and wherein the light diffusion medium has a planar, convex or concave exterior surface.

23. The illuminator as in claim 22, wherein the angle is between about 45^0 to about 90^0

24. A surgical light system comprising a light source, and an optical probe optically coupled to the light source, wherein said optical probe comprises an optical illuminator as in claim 1 or 5.

25. A method of making an optical illuminator which comprises affixing light-diffusing particles to a terminal end of an optical fiber.

26. A method as in claim 25, which wherein said step of affixing the light-diffusing particles comprises (i) dispersing the particles in a bonding material to form a light diffusion medium (LDM), and thereafter (ii) applying a mass of the LDM to the terminal end of the optical fiber.

27. The method of claim 26, wherein step (i) is practiced by dispersing solid light-diffusing particles in a liquid bonding material.

28. The method of claim 27, wherein step (ii) is practiced by applying a mass of the liquid bonding material to the terminal end of the optical fiber and thereafter (iii) allowing the bonding material to solidify.

29. The method of claim 26, which comprises shaping the LDM and/or terminal end of the optical fiber.

30. The method of claim 26, wherein the particles are dispersed symmetrically or asymmetrically in the bonding material.